Case Study

Surfline

> **While many people** turn to mainstream media to get their updates, where do mainstream media turn when they need an edge?

When major weather events strike, news outlets scramble to gather the most current information, forecasts and – perhaps most importantly – real-time visuals to show the storm, its intensity and its potential damage up close. The average news consumer is also driven to seek out accurate forecasts and visual footage as weather events unfold. While many people turn to mainstream media to get their updates, where do mainstream media turn when they need an edge?

At its core, Surfline/Wavetrak, Inc. is a company focused on providing up-to-the-minute ocean weather information to enable its users to enjoy peak surfing, marine and fishing experiences through its web and mobile properties: Surfline.com, Buoyweather.com and Fishtrack.com.

Surfline has, since 1996, established the world's largest streaming coastal HD cam network. This streaming video content combined with premium surf and ocean forecasts and editorial content has traditionally been geared toward the surf community on surfline.com, and, increasingly, other ocean-activity enthusiasts and specialists, who use Buoyweather.com and Fishtrack.com for marine and fishing applications. However, Surfline's audience broadens considerably at times in line with the ubiquity of the internet, the 24/7 news cycle and consumer demand for more in-depth, real-time data when there are spectacular marine events. The breadth and reach of Surfline's live HD camera network makes the site a go-to destination for non-ocean-enthusiast traffic interested in such topics as dramatic weather events (hurricanes, tropical storms tsunamis, massive swells, among others). These audiences sometimes include mainstream media outlets who do not have the same kind of on-the-ground visual access to events as they unfold.

Surfline's combination of live and predicted ocean-weather data, editorial and consulting services, alongside industry-leading, cross-platform technology, makes for a formidable online presence, with millions of visitors a month.

The challenge: Taming the waves

Surfline manages its core business with technical and operational savvy underpinning its growth, serving hundreds of thousands of customers and millions of page views per day. Surfline also syndicates a great deal of data through its APIs, and works to ensure it is served as quickly as possible across websites, apps and connected TV platforms. Because weather and ocean data changes frequently throughout the day and across time zones, Surfline has long used Varnish Streaming Server as a solution to ensure breaking news does not break the application servers.

During significant weather events, however, many people – far more visitors than normally use Surfline's website – want to see what is happening with coastal weather catastrophes in real time. Major media outlets also turn to Surfline for its live footage. For example, during 2014's Hurricane Marie (which boosted visits to the site by over 200 percent), Surfline's live streaming camera network made it a magnet for new visitors globally who were not part of Surfline's core audience. Surfline met the demand during this traffic spike and provided a fast, seamless experience for all users of their services.

Weather-event-driven traffic "spikes", deliver four-to-five times more visits than average, to Surfline's web properties. Serving these requests individually from the full-application stack every time would overload the system and require a significant investment in server hardware, which is where Varnish's caching saves the day.

Solution: Surf break

Surfline's peak-traffic demands drove the need for a practical and scalable solution. Other underlying challenges, such as Surfline's original application structure and backend that was not resilient enough to withstand high-traffic peaks, drove demand for a flexible solution. Surfline growth goals and service offerings, such as its service-oriented architecture business, also drove the need for focusing on growth-oriented activity and development rather than horizontally scaling legacy backend infrastructure. Caching was the way forward.

After getting good results from using and adapting Varnish Cache to deliver the fastest page rendering and page views that a site can provide, Surfline realized it needed more advanced functionality and soon upgraded to Varnish Streaming Server. Surfline came to Varnish Cache as a caching solution based on recommendations from others who had great success and much higher capacity needs than Surfline. While Surfline considered and tried alternatives, nothing has been as fast or as flexible as Varnish.

> *"Varnish has given us the capacity to grow without compromising on delivering the most premium user experience available."*
>
> *-Brian Mezger, Vice President of Technology*

Similarly, the Varnish VCL language allows for the creation of custom tools to meet specific needs. Surfline, for example, offers both free and premium experiences, as well as highly dynamic content, and requires much more granular control over TTLs and request handling. Being able to do custom purging, purging-on-demand and purging on a change-in-data set automatically were also key elements of Surfline's custom development using VCL. (Many of these features are available in Varnish Streaming Server, but Surfline's experience illustrates the flexibility and customizability of Varnish Cache and VCL for those who have the time and technical acuity to build and manage their own custom features.) When searching for a solution that offered both a high degree of flexibility and granularity without being difficult to implement or use, Varnish Streaming Server led the way.

Results

Varnish Streaming Server has helped Surfline realize performance enhancements, ensure uninterrupted and fast user experiences and reduce the need for significant hardware and infrastructure investments.

Key to performance is ensuring Surfline meets traffic demands without interruption, without accompanying lags in speed or service and without having to scale up application servers. Using page-load times, automated testing for API-response times and gauging the number of users served and subscribers year-on-year as barometers, Surfline sees that Varnish has contributed to a positive impact on performance across its portfolio (Surfline, Buoyweather, Fishtrack and apps and data services).

In summary, Varnish helps keep Surfline systems from a major wipeout. In normal circumstances, Varnish Streaming Server delivers the best possible user experience on any device while preserving the existing infrastructure and hardware setup. Surfline has been able to maintain the server base without adding to it, saving considerable expense. Moving forward, Surfline will probably be able to reduce the number of app servers required as Varnish High Availability is rolled out. Not only has this kept costs manageable, it has helped to enable growth as Surfline's sites, native apps, data services, APIs and data syndication have grown, adding pressure on the internal architecture and server environment.

> *"Varnish Streaming Server has negated the need for adding application servers and has helped us to manage services and continue growing while keeping us fast and nimble."*
>
> *-Brian Mezger, Vice President of Technology*

The future

Surfline is currently testing Varnish High Availability (HA) for near-term implementation. The company predicts Varnish HA will provide real-time replication and load balancing without slowing when a server goes down.

Surfline has millions of users who rely on its 24/7 services, making resiliency and fault tolerance critical needs. Because Varnish Software solutions have played an important part in the Surfline environment, it is important to ensure that Varnish HA is deployed to ensure real-time replication between multiple instances to safeguard the fast experience that end users expect. Without Varnish HA, the potential for short periods of downtime and lagging/slowness as caches start to fill up exists. While Surfline has auto failovers, they exist in a cold-cache environment that would create a delay as they warm up. Varnish HA will provide that extra layer of protection and performance on which Surfline relies heavily.

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